



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,725	06/26/2003	John K. Hagge	02CR092/KE	5815

7590 01/12/2006

ROCKWELL COLLINS, INC.

Attention: Kyle Epele

M/S 124-323

400 Collins Rd. NE

Cedar Rapids, IA 52498

EXAMINER

SHERMAN, STEPHEN G

ART UNIT

PAPER NUMBER

2674

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,725

Applicant(s)

HAGGE ET AL.

Examiner

Stephen G. Sherman

Art Unit

2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. This office action is in response to the amendment filed 8 December 2005.

Claims 1-20 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

Art Unit: 2674

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1, 3-6, 8-15 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matthies (US 6,498,592) in view of Albert et al. (US 6,252,564).

Regarding claim 1, Matthies discloses a display system, comprising:
a plurality of tiles (Figure 1),
each tile of the tiles including a matrix of pixel elements (Column 4, lines 30-35),
the pixel elements selectively providing light at a first surface (Column 5, lines 6-12) of the tile in response to address signals,
the pixel elements being coupled to an address circuit (Figure 2, item 22 and Column 8, lines 52-56)
via contacts at a second surface (Column 5, lines 30-37),
the first surface being opposite the second surface (Figure 3, items 526 and 516); and
a medium having a mounting surface, the plurality of tiles being attached to or above the mounting surface (Column 7, lines 38-41).

Matthies fails to teach wherein the contacts extend below the second surface and are coupled to the pixel elements, wherein the contacts are disposed between rib structures.

Albert et al. disclose a display system wherein contacts extend below a second surface and are coupled to pixel elements, wherein the contacts are disposed between

rib structures (Figure 5E and column 13, lines 22-44. The examiner interprets that the display medias 46 are the pixel elements, where vias 94 are the contacts which extend below a second surface 92 and are coupled to the pixel elements 46, and that vias 60 are rib structures in which the contacts are disposed between.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the structure taught by Albert et al. with the display system taught by Matthies in order to achieve a highly-flexible reflective display which can be manufactured easily, consume little power, and can, therefore, be incorporated into a variety of applications.

Regarding claim 3, Matthies and Albert et al. disclose the display system of claim 1. Albert et al. also discloses wherein the medium is flexible (Column 7, lines 15-19. The examiner interprets that since the entire display device is flexible that the medium on which the display is mounted would also be flexible).

Regarding claim 4, Matthies and Albert et al. disclose the display system of claim 1. Matthies also discloses wherein the address signals are row and column address signals (Column 4, lines 17-18).

Regarding claim 5, Matthies and Albert et al. disclose the display system of claim 1. Matthies also discloses a display system further comprising:

an interconnect member (Figure 3, item 514) coupled to the second surface (Figure 3, items 516),

the interconnect member including a front surface coupled to the second surface and a back surface opposite the front surface, wherein conductive vias extend from the front surface to the back surface, the conductive vias being coupled to the contacts (Figure 3, items 520 and 522 and Column 12, lines 37-41).

Regarding claim 6, Matthies and Albert et al. disclose the display system of claim 5. Matthies also discloses a display system further comprising: an interposer coupled to the interconnect member (Figure 3, items 510 and 514), the interposer including the address circuit (Column 8, lines 52-56).

Regarding claim 8, Matthies discloses a cockpit display (The recitation “cockpit display” has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).), comprising:

a plurality of display tiles (Figure 1),

at least one tile of the display tiles including a matrix of pixel elements (Column 4, lines 30-35),

the pixel display tiles including conductors at a second surface of the pixel web (Figure 3, item 526),

the first surface being opposite the second surface (Figure 3, items 532 and 526); and

a medium having a mounting surface (Column 7, lines 38-41), the plurality of display tiles being attached to or above the mounting surface (Column 7, lines 38-41).

Matthies fails to disclose the plurality of display tiles being attached to or above the mounting surface at the first surface. However, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to mount the tiles at the first surface such that the back panel would not be needed in order to provide for a more compact display system.

Matthies also fails to teach of a display system wherein the contacts extend below the second surface and are coupled to the pixel elements, wherein the contacts are disposed between rib structures.

Albert et al. disclose a display system wherein contacts extend below a second surface and are coupled to pixel elements, wherein the contacts are disposed between rib structures (Figure 5E and column 13, lines 22-44. The examiner interprets that the display medias 46 are the pixel elements, where vias 94 are the contacts which extend below a second surface 92 and are coupled to the pixel elements 46, and that vias 60 are rib structures in which the contacts are disposed between.).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the structure taught by Albert et al. with the display system taught by Matthies in order to achieve a highly-flexible reflective display which can be manufactured easily, consume little power, and can, therefore, be incorporated into a variety of applications.

Regarding claim 9, Matthies and Albert et al. disclose the display of claim 8. Albert et al. also disclose wherein the medium is flexible (Column 7, lines 15-19. The examiner interprets that since the entire display device is flexible that the medium on which the display is mounted would also be flexible).

Regarding claim 10, Matthies and Albert et al. disclose the display of claim 9. Matthies also discloses wherein the display tile further comprises an interconnect medium coupled to the contacts (Figure 3, item 514). Albert et al. also discloses of a flexible interconnect medium (Column 7, lines 15-19. The examiner interprets that since the entire device is flexible that the interconnect layer would also be flexible.).

Regarding claim 11, Matthies discloses a display apparatus, comprising:
first means for providing first light from first pixel elements at a first surface
(Column 5, lines 7-24),
the first surface being opposite a second surface (Figure 3, items 526 and 516),
the second surface including first contacts (Figure 3, items 520 and 522),

first means for providing first paths for first electric signals (Figure 3, items 520 and 522),

the first paths being connected to the first contacts (Column 6, lines 9-12),

the first means for providing first paths being mounted behind the second surface and being closer to the second surface than the first surface (Column 6, lines 9-12);

second means for providing second light from second pixel elements at a third surface (Column 5, lines 7-24),

the third surface being opposite a fourth surface (Figure 3, items 526 and 516),

the fourth surface including second contacts (Figure 3, items 520 and 522),

second means for providing second paths for second electric signals (Figure 3, items 520 and 522),

the second paths being connected to the second contacts (Column 6, lines 9-12),

the second means for providing second paths being mounted behind the fourth surface and being closer to the fourth surface than the third surface (Column 6, line 9-12. The examiner interprets this to mean that since Figure 3 shows an individual tile and Figure 1 shows the tiles being put together that each tile has its own individual connection that is made to the back panel of the device for providing means for electrical signals.).

Matthies fails to disclose means for providing the first electric signals and second electric signals to the first means for providing paths and second paths, the first electric signals and second electric signals controlling the first light and the second light, and the first contacts being disposed between rib structures.

Albert et al. disclose means for providing the first electric signals and second electric signals to the first means for providing paths and second paths, the first electric signals and second electric signals controlling the first light and the second light (Column 16, lines 50-53. The examiner interprets that if each element has its own lead line that there would therefore be means for providing a first and second electric signal to the paths), and first contacts being disposed between rib structures (Figure 5E and column 13, lines 22-44. The examiner interprets that vias 94 are the contacts and that vias 60 are rib structures in which the contacts are disposed between.).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the structure taught by Albert et al. with the display system taught by Matthies in order to achieve a highly-flexible reflective display which can be manufactured easily, consume little power, and can, therefore, be incorporated into a variety of applications.

Regarding claim 12, Matthies and Albert et al. disclose the display apparatus of claim 11. Albert et al. also disclose of the display apparatus further comprising: means for providing display signals from a remote location to the means for providing the electric signals (Column 4, lines 8-12).

Regarding claim 13, Matthies discloses a method of operating a display, the method comprising:

providing first electric signals from behind a back surface of a first pixel web to the back surface of the first pixel web (Column 6, lines 9-12),

the first pixel web being located on a first tile (Figure 1, item 122);

providing light at a front surface of the first pixel web on the first tile in accordance with the first electric signals', providing second electric signals from behind a back surface of a second pixel web to the back surface of the second pixel web (Column 6, lines 9-12),

the second pixel web being located on a second tile (Figure 1, item 124); and

providing light at a front surface of the second pixel web on the second tile in accordance with the second electric signals (The examiner interprets that since the means are provided in claim 11 for providing a first and second electrical signal, that the method of providing the electrical signals is also provided).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the structure taught by Albert et al. with the display system taught by Matthies in order to achieve a highly-flexible reflective display which can be manufactured easily, consume little power, and can, therefore, be incorporated into a variety of applications.

Regarding claim 14, Matthies and Albert et al. disclose the method of claim 13. Matthies also discloses wherein the first electric signals travel from the back surface to the front surface through conductive vias extending through the pixel web (Figure 3, items 520 and 522).

Regarding claim 15, Matthies and Albert et al. disclose the method of claim 14.

Matthies also discloses wherein the first pixel web and the second pixel web are attached to a medium (Column 7, lines 38-41), the first pixel web having a first edge adjacent a second edge of the second pixel web (Figure 1, items 102 and 104).

Regarding claim 19, Matthies discloses a display comprising:

a plurality of tiles (Figure 1),

each of the tiles having a first surface and a second surface parallel with a first plane (Figure 3, items 526 and 516),

wherein the first surface includes a plurality of pixel elements for selectively providing light (Column 5, lines 7-12),

the second surface including a plurality of contacts electrically associated with the pixel elements (Figure 3, items 520 and 522 and column 12, lines 37-41),

wherein conductive vias extend from the contacts to the pixel elements in a direction relatively perpendicular to the first plane (In Figure 3, items 520 and 522 can be seen to be located such as to form a connection in a perpendicular direction to the first plane, item 526).

Matthies fails to teach of a display where the conductive vias are disposed between rib structures.

Albert et al. disclose of conductive vias being disposed between rib structures (Figure 5E and column 13, lines 22-44. The examiner interprets that vias 94 are the

conductive vias and that vias 60 are rib structures in which the vias are disposed between.).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the structure taught by Albert et al. with the display system taught by Matthies in order to achieve a highly-flexible reflective display which can be manufactured easily, consume little power, and can, therefore, be incorporated into a variety of applications.

Regarding claim 20, Matthies and Albert et al. disclose the display of claim 19. Matthies also discloses wherein edges of the tiles do not include interconnections, all interconnections for the tiles being accomplished in the direction relatively perpendicular to the first plane (Column 7, lines 47-51. The examiner interprets this to mean that since the individual tiles can be plugged in and removed for replacement that they are not interconnected and are attached in a perpendicular direction to the first plane.).

6. Claims 2 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matthies (US 6,498,592) in view of Albert et al. (US 6,252,564) and further in view of Mazurek et al. (US 5,805,117).

Regarding claim 2, Matthies and Albert et al. disclose the display system of claim 1.

Matthies and Albert et al. fail to teach wherein the medium is transparent and the tiles are mounted so that the first surface is closer to the mounting surface than the second surface.

Mazurek et al. discloses wherein the medium is transparent (Figure 3, item 330 and Column 7, lines 33-36) and the tiles are mounted so that the first surface is closer to the mounting surface than the second surface (Figure 3, items 330 and 100. The examiner interprets the global glass cover, item 330, to be part of the mounting surface wherein the first surface of item 100 would be closer to item 330 than the second surface).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to combine the teachings of Matthies, Albert et al. and Mazurek in order to provide for a display device that would be more take up less space in situations where space is a commodity.

Regarding claim 16, Matthies discloses a method of manufacturing a display system, the method comprising:

providing a plurality of tiles (Figure 1),

each of the tiles having a first surface and a second surface parallel with a first plane (Figure 3, items 526 and 516),

wherein the first surface includes a plurality of pixel elements for selectively providing light (Figure 3, item 526 and Column 5, lines 7-12),

the second surface (Figure 3, item 516) including a plurality of contacts electrically associated with the pixel elements (Figure 3, items 520 and 522), and attaching the tiles to a carrier medium (Column 7, lines 38-41).

Matthies fails to teach of the conductive vias being disposed between rib structures.

Albert et al. disclose of conductive vias being disposed between rib structures (Figure 5E and column 13, lines 22-44. The examiner interprets that vias 94 are the conductive vias and that vias 60 are rib structures in which the vias are disposed between.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the structure taught by Albert et al. with the display system taught by Matthies in order to achieve a highly-flexible reflective display which can be manufactured easily, consume little power, and can, therefore, be incorporated into a variety of applications.

Matthies and Albert et al. fail to teach of providing a transparent carrier medium.

Mazurek teaches of providing a transparent carrier medium (Figure 3, item 330. The examiner interprets item 330 to be a transparent covering for the tiles that is part of a carrier medium used to contain the tiles. Also since all of the elements of the display system are present in Matthies and Mazurek, there would also be a way to manufacture the system.).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to combine the teachings Matthies, Albert et al. and Mazurek in order to manufacture the display system as described to provide it for use.

Regarding claim 17, Matthies, Albert et al. and Mazurek disclose the method of claim 16.

Matthies, Albert et al. and Mazurek fail to teach wherein the carrier medium is a plastic film.

However, it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to make the carrier medium a plastic film in order to allow for the flexibility of the display system such that the display could be shaped to fit its use.

Regarding claim 18, Matthies, Albert et al. and Mazurek disclose the method of claim 17.

Matthies also discloses of the display system further comprising:

electrically coupling a conductor to at least one of the contacts on the second surface (Figure 3, item 516) to a circuit board (Figure 3, items 520 and 522 and column 5, lines 30-37).

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matthies (US 6,498,592) in view of Albert et al. (US 6,252,564) and further in view of Palanisamy (US 6,849,935).

Regarding claim 7, Matthies and Albert et al. disclose the display system of claim 6. Matthies also discloses wherein the interposer is a flexible circuit board (Column 2, lines 50-52).

Matthies and Albert et al. fail to teach of the display system of claim 6, wherein the interposer is coupled to the interconnect member by flexible leads.

Palanisamy teaches of the display system of claim 6, wherein the interposer is coupled to the interconnect member by flexible leads (Figure 1A, items 114 and column 4, lines 10-17. The examiner interprets that if the flexible leads are made of a conductive elastomer that they would be flexible).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to combine the teachings of Matthies, Albert et al. and Palanisamy in order to provide for the flexibility of the entire display system such that it could be shaped to fit its use.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2674

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SS



PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER

3 January 2006